NEWSLETTER

DIGNAN PHOTOGRAPHIC INC., 12304 ERWIN ST., NO. HOLLYWOOD, CALIF. 91606

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IMPORTANT CHANGE IN C-22 DEVELOPER

POT-POURRI

YEARLY NEWSLETTER INDEX

This issue completes two years of the Newsletter. We would like to take a few moments and look back over what has and has not been accomplished.

Our CP-5 and Agfacolor formulas are being used by thousands of photographers, with very few problems.

C-22 Official and Unofficial are also producing results superior to Kodak's new liquid kits (if you have not already read Camera 35 for September, pick up a copy. Paul Farber confronts Kodak on this point. We are reprinting one page of the article). In this issue we have two minor changes in C-22 - but they are important.

The Dignan One-Shot color formulas are not only very easy to mix but they also are producing excellent results.

We think we have pretty well covered color printing, although we will pursue it until we feel the system is full-proof (impossible?).

"Chemical conversions made almost easy" by Reichner was a welcome article and we plan in the future to revise most of the formulas so that with approximately 50 chemicals you will be able to process most black & white and color emulsions that can be processed by the user.

We've received many letters of thanks for introducing our readers to divided black & white developers by Paul Farber.

Although we have published the Official formula for E-4, we are not happy with our attempts at substitution and we plan to devote more time to this project.

In the two years there has been many a loose end and each issue seems to produce new ones.

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Many of the projects that we have worked on have not ended up in the Newsletter because of failure. Farber spent many weeks trying to eliminate the problems encountered in using and processing Fuji Dupe Film. He finally solved the processing problems and then ran into exposure problems. We will cover this in the September issue.

Pot-Pourri

The letters for this issue were picked as representative of a number of letters covering the same topic. We first attempted to put these into groups according to subject, but this became involved because many people wrote on more than one subject.

If you fine that a letter that you wrote us has been shortened or rearranged (in some instances we have combined two letters) please forgive us - it is an attempt at continuity.

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COLOR PRINTING MADE ~~EASY~~ HARD!

of no consideration. I used a light source, and corrective filters, which balanced the light to the film. Condition #2 was also of no importance. From the number of test exposures which I made, surely at least one of them would have been correct. This left condition #3 as the possible culprit. Now, there is a permissible tolerance in the allowable track deviation. This tolerance is approximately represented by a .08 density difference in any of the ten steps of the gray scale. If the density difference in any of the ten steps is greater than .08, well, the negative is hardly printable. In my initial test roll, I was running into density differences that exceeded .20. Nowhere close.

Also, the density range of the negatives exceeded 1.20. The density range of a negative is measured by reading both the highlight and shadow densities, and subtracting one from the other. Most well-exposed and developed color negatives have a density range of .60 to .70. This is an important measurement because the density range of most color print papers is approximately .75. In the case of my test negative, which had a density range of 1.20, it simply would not fit onto a piece of paper (assuming that there was some degree of parallelism in the tracking). It meant that if I wanted the highlights to print, then I would have to sacrifice the shadows, and if I wanted the shadows, then I would have to sacrifice the highlights. The only analogy which I can give is to compare it to trying to put a size 10 foot into a size 7 shoe—very painful!

So, I actually had three choices. I could assume the film was bad, the chemistry contaminated, or that I had incorrectly processed the negatives. I then exposed another roll of film, mixed a fresh batch of C-22 chemicals (from another kit), and processed the second roll of film. It, too, was a total densitometric disaster! Really, Jim, at that point I knew that *something* was wrong. But whether it was the film or the developer remained a mystery. I had paid too much attention to critical details to believe that it was all my fault. The next, and logical, thing to do would be to buy more film, and more kits. And so I did . . .

Returning to the studio I proceeded to expose three rolls of Kodacolor-X under controlled conditions (including my temper, which I must admit was wearing thin). Then, on an impulse, I placed one of the exposed rolls in the deep freeze, the other was sent off to Kodak for processing, and I processed the third roll in some of the C-22 chemistry. As was anticipated, the self-processed roll was unbelievably bad. It was fogged, dense, and contrasty. Aha! But the roll of film which had been Kodak processed was plu-perfect! When checked in the Mornick Analyzer, it tracked beautifully. My roll of C-22 processed film was unusable. Kodak's C-22 processed roll of film was perfect. As Arte Johnson says, "Very interesting, but stupid!"

I still had that third roll of film in the deep freeze, and I began to get another idea. The idea was to mix up my own C-22 chemistry from scratch, using the official Kodak C-22 formula. A call was placed to Dignan Photographic, Inc., 12304 Erwin St., North Hollywood, California 91606. The purpose was to buy the formula and the necessary chemicals so that I could mix my own C-22 chemistry. You know, there persists a feeling among some photographers that to mix up your own color developers requires a degree in chemistry. This is simply not true. All you need is a fairly accurate scale, and a bit of time. I was able to mix a complete set of C-22 chemistry (developer, stop-bath, hardener, bleach and fixer) in less than 30 minutes. But, again, I get ahead of myself . . .

Suffice it to say that I removed the roll of exposed Kodacolor-X from the deep freeze, and allowed it to reach room temperature. Then I processed it in my home-brewed C-22, (using the same timing as I used with the Kodak kits). Frankly, Jim, the negatives were absolutely beautiful! I even recall that they were slightly better than the Kodak processed negatives (which was extremely gratifying under the circumstances)! My Mornick Color Analyzer told the story. All three layers in the correctly exposed frame tracked beautifully. The negatives had the correct density range, and they printed easily and well. This was a far cry from the results I obtained with the new liquid C-22 chemistry I had used in my previous tests.

The exact cause of the problem is really beyond my immediate comprehension. However, I *do* have an inkling into the matter: the official Kodak C-22 formula (for the developer) calls for it to have a pH of 10.75, plus or minus .05. Now, pH is a measure of the acid/alkali balance of a developer, and it relates directly to correct processing at a specified temperature. When I mixed my C-22 developer, from scratch, and then measured the pH, it was within .02 of norm—and according to the official tolerance, I was in fairly good shape . . .

When I measured the working pH of the developer from one of the 16 ounce kits, it was 11.1 (indicating excessive activity, which could result in fog, and high contrast). Another kit proved to have a working pH of 10.95—again on the alkaline side, and again a cause of improper tracking. Interestingly enough, when I measured the working pH of one of the 3½ gallon kits it had a pH of 10.80, which was at the edge of the official tolerance, but still on the money. So, the problem seemed to be in the pH of the developer. At least, that is what *I* believe!

Perhaps I ran into a sour batch of liquid chemistry—or perhaps the chemistry of the smaller kits is slightly different than that of the larger, professional, kits. However, I prefer to believe that my problem was one of "sour" chemistry. Whatever the reason, thanks to my pH meter I was able to correct the chemistry (by the addition of acid) to

(Continued on page 70)

IMPORTANT CHANGE IN C-22 DEVELOPER

As many of you know we are after as much perfection as possible. We have covered C-22 in a number of different forms in the past two years. The simplified developer that appeared in the Simplified C-22 Formulas of the June 1970 issue, has been further simplified and also improved. The changes are small, however the improvement in results is noticeable.

The small amount of Potassium Iodide that is officially recommended has been eliminated. Tests conducted with and without Iodide shows no difference in the negative. This in part may be due to the fact that small amounts of Iodide is always present as a contaminate of either Sodium Bromide or Potassium Bromide. This is regardless of the grade of chemical used, whether it be analytical reagent or photograde. We suspect Kodak is specifying 1/2 milligram is adding a little magic to discourage the novice.

Kodak is now recommending that C-22 developer should have a pH of 10.62 $\pm$ .02.

The following developer contains a change in the amount of Sodium Metaborate so that this solution will have the recommended pH of 10.62.

C-22 DEVELOPER		Dignan's Catalog No.
Water	500.0 cc	
Benzyl Alcohol	5.0 cc	(B200)
Diethylene Glycol	15.0 cc	(D380)
Potassium Bromide	1.7 grams	(P530)
Sodium Metaborate	84.0 grams	(S700)
Sodium Sulfite, anhy.	1.85 grams	(S790)
CD-3	5.0 grams	(DD-3)
Calgon, photograde	2.5 grams	(C150)
Water to	1.0 liter (1000. cc)	

pH: 10.62

For more complete information for mixing this solutions, please refer to the May 1970 issue, page U-399.

AGFA DUPLICATING FILM AND OTHER THINGS

"I received 100' of the new Agfachrome Duplicating Film some time ago and have been experimenting with it.

The green D/MAX has made it impossible to use the film for anything serious. I have tried various processing solutions to no avail.

I understand that Mr. Reichner has been working on the problem. If he has come up with a solution I would be most happy to hear about it."

Sam Swannie
872 Condor Dr
Burlington, Ont., Canada

"I am having trouble with the Color Developer given in the "My Wonder Film" article with CD-3. No matter how carefully I mix it, I get precipitation. Have tried several times.

I poured off the clear solution and tried it and it works beautifully. Perfectly neutral grays, completely eliminates the green D/MAX problem.

Seems like I should keep it all in solution though. Has there been a correction in this formula?

Appreciate any help on this."

Bernard Kottler
3220 Mockingbird Lane
Evansville, Ind.

"When mixing the color developer for Agfachrome Duplicating Film as described on page E-118 of the Newsletter (modified as later suggested to 8 grams of DD-3) I had the precipitate you say we may get even though I followed the instructions exactly. Measurement of the pH indicated that the solution was nearer a pH of 8.0 than the 10.6 that it was supposed to be. Raising the pH to 10.6 by the addition of NaOH caused the precipitate it should. I now have no trouble in mixing this solution. For those not having a pH meter they can just add NaOH slowly while stirring until the precipitate dissolves and they will be very close to a pH of 10.6

The above procedure has taken all the work and worry out of mixing this developer for me. I hope it may help others also."

Ward L. Newgent
136 Burr Road
E. Northport, N.Y.

"Too bad the "Wonder Film" hasn't worked out too well. I got some of the "Improved" film and nearly went nuts juggling formulas to try to get rid of the green cast. But nothing worked.

I have just tried Reichner's improved formula. It does a better job but there is still green in the shadows and margins. Regular Agfa film came out well in the original formulas. A big disappointment is that the speed is down to about 25 ASA."

Sam Swannie
872 Condor Dr.
Burlington, Ont., Canada

"I am writing to report that I have had outstanding results using D.W. Reichner's formulas published in the June 1970 issue of the Newsletter. I must congratulate you and him for resolving the problems encountered with the color developer published earlier. However, in all fairness, I must report that I have had equally good results processing Agfa Dupe film with the simple little formula (using DD-6) sent in by one of your readers some time ago.

On the other hand, I think you should know that I virtually destroyed two rolls of Anscochrome D64 processed in the AR-2 solutions compounded to your published specifications. I encounted severe reticulation of the emulsion on this film along with a white deposit which could not be removed. Since I have processed hundreds of rolls of this and other films, I believe I am experienced enough not to have made a mistake (twice in a row?).

Is there an error somewhere in this process?"

Walter G. Bohaker
261 Laurelton St.
Springfield, Mass.

Answer: The GAF emulsions are probably the softest emulsions manufactured today. The problem is not in the formulas, it is built into the film. A pre-hardener is needed and we have spent many hours working on this problem without results that are worth publishing. The best approach is to stick to AR-1 and use the low temperature figures for the secondary baths keeping both developers at 75°f.

"In the February issue of your Newsletter you published the formulas for processing (AR-1d) Anscochrome film. I have tried processing T-100 Anscochrome 8mm film in a Model 18 Micro Record rewind tank at 75° and at 68°f. In each instance the emulsion comes off the film. Oh there are a few pictures left, enough to know that it works except for the temperature.

Is there such a thing as a pre-hardener that can be used prior to the first developer?

George T. Fike
Greater Arizona Savings Bldg. #502
Phoenix, Ariz

"I have had excellent results with Ansco AR-1D and AR-2 process. Using formulas from Newsletter."

Richard Beck
124 E. Myrtle St.
Hanford, Ca.

"I thought I might report the results of some of my recent puttering in the darkroom.

I have received the Agfa Duplicating Film and have begun some tests, using Reichner formulas as printed in vol. E of the Newsletter. On mixing the color developer, I first tried the J-194 "revised mixing instructions" and came up with a horrible murky mess, just the thing this was to prevent! So I went back to the original method (CD-3 as part of Part A, though reduced to 8 grams) and found it all mixed perfectly. On the results, I found that 4 min. in the first developer brought rather badly underexposed or underdeveloped results. Now, since it was not clear whether the new time of 4 min. meant for low contrast duplicating results or for use at ASA 64, I moved to the suggestions for developing time by Vance in vol. N. Pushing up the developing time to 9 1/2 min. did result in properly exposed transparencies at ASA 50.

Now for the color results. Color rendition was excellent, but D/Max was rather low. It was also slightly on the green side, but the major problem was this thinness. Could this be the result of a reduction of the CD-3 in the Reichner formula from 10 to 8 gr.? Or is the problem much more basic? Incidentally, hoping that the problem is in the present formulation of the color developer, which might be added safely? Or are there other remedies I haven't tried yet?"

J. Brad Lentz
PO Box655
17 Garden Lane
Durham, New Hampshire

"Received the June issue of your newsletter and read with interest the revised formulas for Agfachrome Duplicating film. For over a year I have been exposing at an EI of 64 and using the "old" processing solutions; with the following modifications to the First developer and its use. The addition of 8.0 mg/l of Potassium Iodide, using Metol instead of Phenidone, constant agitation and a processing time of 6 min at 75°f. Enclosed is a sample slide processed without these changes (low image density and high green fog level) and a slide of Kodak's color chart and gray scale processed in the modified first developer. Quite good color in the newer slide if I do say so myself. The color balance seems to be what it should be and at an EI of 64.

Some minor changes were also made in compounding the First Dev., Color Dev., and Bleach-Hardener to improve their keeping properties. I may go for months without processing any slides and had in the past thrown a lot of oxidized developer and blue bleach solution down the drain. Given below are the solutions which I use.

FIRST DEVELOPER - PART A

Water	350.0 cc
Metol	2.0 grams
Sodium Sulfite, anhy.	25.0 grams
Hydroquinone	4.0 grams
Benzotriazole (0.2%)	15.0 cc

-continued-

FIRST DEVELOPER - PART A (Continued)

Potassium Iodide (0.1%)	8.0 cc
Potassium Thiocyanate (10%)	20.0 cc
Potassium Bromide (10%)	20.0 cc
Water to	500.0 cc

PART B

Sodium Carbonate, mono.	30.0 grams
Water to	500.0 cc

For use take equal portions of A and B. Use as a one-shot.

NOTES: The calgon was omitted and distilled water used all solutions. Since the color emulsion is so sensitive (only 8 mg/l of Potassium Iodide has a spectacular effect) and you really don't know what's in your local water supply why take chances.

Part B keeps best in a polyethylene container. The solution being alkaline, it dissolves glass slowly forming a sludge of silica.

Metol is used in the above developer because any oxidation of the solution is signaled by a brown color, in which case solution A should be discarded. Part A has kept for 8 months in very good condition in a half filled bottle. (Phenidone may oxidize or hydroyse without any such indication. After having two liters of print developer containing phenidone go bad while still looking perfectly respectable (two months storage in the summer), I tend to be very suspicious of phenidone based developers. The higher the pH of the solution the greater the chance for hydrolsis. With the above divided solution this problem should be minimal, but again why take chances. I believe that Kodak has stated that this is why they have not made further use of phenidone and its derivatives for amateur use. HC 110 is really intended for commercial use.)

COLOR DEVELOPER:

Water	300.0 cc
Sodium Sulfite, anhy.	3.0 grams
Potassium Bromide (10%)	10.0 cc
Sodium Carbonate, mono.	60.0 grams
Water to	500.0 cc

Store stock solution in polyethylene containers for reason mentioned above. For each 250 cc of working solution dissolve 2.0 grams of CD-3 in 125 cc of water and when completely dissolved add 125 cc of the above stock solution with stirring. If possible allow to stand the 12 hours as recommended but prepared as above I have used the color developer immediately with no apparent problems.

NOTE: In the two developers 10% solutions of Potassium Thiocyanate and Potassium Bromide have been used instead of the 20% solutions recommended in the original article. The First developer is sensitive as to the amount of thiocyanate and the weaker solution gives you greater accuracy in measuring and in calculating the amount needed. For consistant results make up a liter of 10% strength for each of the two chemicals mentioned and measure carefully.

BLEACH HARDENER:

Water	350.0 cc
Sodium Acetate, anhy.	20.0 grams
Potassium Alum	30.0 grams
Borax	10.0 grams
Potassium Bromide	15.0 grams
Water to	500.0 cc

For use dilute with an equal amount of water and add to each 250 cc of working solution 7.5 grams Potassium Ferricyanide. The bleach made with the ferricyanide included tends to deposit a sludge of Prussian blue and develops a strong odor of hydrogen cyanide. This cuts the storage life of the solution and the cyanide fumes could cause problems in a small poorly ventilated darkroom. Used bleach keeps only for a few days and is best used as a one-shot.

To save shelf space the stop bath and fixer are also made as concentrated solutions which are diluted 1:3 and 1:1, respectively, before use. The stop baths are best discarded after use, but the used fixer keeps well. As stated before these changes in compounding the solutions of the original Reichner were made to improve shelf life and to insure consistancy in the final slides.

One last item concerning the Agfachrome dupe film. For several months I was troubled by a pink stain in unexposed portions of the emulsion. This was finally traced to oxidation of the color developer by hypochlorite in the wash water. With todays mounting problem of water pollution, cities are putting more and more chlorine in their water supplies. The pink stain can be almost totally eliminated by adding a small amount of sodium sulfite to the rinse water and allowing it to stand for 20 mins. (a pinch per liter is sufficient). This need be done only for the rinse after color development, but I use it for all rinses. With the water supply in St. Pete the stain amounted to a CC 10R filter sometimes a bit more sometimes a bit less, but always visible in the slides."

Gerald C. Koch
647 Northwest Blvd
St. Petersburg, Fla.

DIGNAN COLOR PRINT PAPER

"I just want you to know how very pleased I am with the Dignan Color Paper it is beautiful. My first print was right on the nose for filter and exposure. I got carried away and ran off 16 - 8x10 different prints in record time, boy, it certainly is a time saver over the CP-5 Process and the coloration in that Dignan Paper is right out of this world. Thanks for exposing me to it..."

Walton G. Banks
PO Box 102
Upper Marlboro, Md

"The Dignan Color Print Paper continues to work beautifully and makes excellent prints. The formulas for processing also work good and have great capacity. I recently processed the equivalent of 28 prints 8x10 in one liter of solutions without any degradation in quality, although to be safe I did use two liters of developer. This is about four times the rated capacity of the Ektaprint C kit chemicals!"

W. F. Lehman
7546 Normandy Way
San Jose, Ca

"I have been processing the Dignan Color Print paper in CP-5 on the drum at 100 degrees with excellent results. I notice that the Newsletter seems never to mention this technique, and so far I have not tried the very short development times given in recent Newsletters. My color production volume has been going up recently, so I am planning to start compounding some of the concentrated CP-5 formulae from a recent Newsletter, in an effort to lower the per print cost of processing. According to my calculations, this cost should drop from 39¢ per print (based on 4 oz. Kodak kit CP-5 at list price) to 16¢ per print using the concentrates (excluding the weighing time cost). Actually I use only 90 ml. of chemical for each print, and have obtained excellent results with both Dignan and Ektacolor papers."

Jess Anderson
Photographs
2838 Stevens St.
Madison, Wis

"The Dignan Color Paper I find is excellent, once one gets on to its way of processing. I find that if the final print is left slightly warm when wet, the end result is fine. I speak only for myself but I have noted that Walt Green of Portland has arrived at the same conclusion."

H. Fosbury
5126 S.E. 37th Ave.
Portland, Ore

"I've played with your color paper, and I've modified the procedure/process somewhat just for the purpose of seeing how the paper reacted to a set of different color developing agents, namely the Eastman CD agents, 1,2,3 and 4.

The same color negative, an unmasked Agfacolor 35mm negative of a set of color patches and a grey scale, was used to make a balanced print with the original formulas which are furnished with the paper. Using the same filtration to get this balance, then four sets of four prints were made, 16 sheets in all, from this negative/filter set up. Each set of four contained exposures in the ratios of 1,2,4,8.

CD-1 resembles the original formula quite closely; CD-2 and CD-4 have a decided shift to the blue-green -- CD-2 more to the green and CD-4 more to the blue; CD-3 produces a print warmer and more to the red-magenta.

Maybe we have a way to shift color response by changing the color developing agent! I get the best yellow from the CD-3 agent. Also, the overall saturation was judged to be best with the CD-4 agent.

I'll be curious to get your reactions."

COLOR DEVELOPER - PART A

1.	Water at 90°f to 100°f	700.0 cc	
2.	Calgon	2.0 grams	
3.	Sodium Phosphate, Tribasic	20.0 grams	
4.	Sodium Metaborate	50.0 grams	
5.	Potassium Bromide	1.0 gram	
6.	6-nitrobenzimidazole nitrate (.2% sol)	5.0 cc	
7.	Water to make	800.0 cc	

COLOR DEVELOPER - PART B

1.	Water at about 80°f	150.0 cc	
2.	Hydroxylamine Hydrochloride	2.0 grams	
3.	Sodium Sulfite, anhy.	4.0 grams	
4.	Color Developing Agent (Eastman agents)		
	CD-1	5.0 grams	(discontinued)
	CD-2	5.5 grams	(DD-2)
	CD-3	12.5 grams	(DD-3)
	CD-4	7.0 grams	(not carried)
5.	Water to make	200.0 cc	

To make complete developer, take 4 parts A and add slowly 1 part B while stirring A.

Adjust total bath pH to 10.5 to 10.9 with 1/10th normal Sodium Hydroxide; 10.7 was used as standard pH.

Color Developer keeps quite well as separate parts; both parts mixed and tightly stoppered about one week; separately and each part tightly stoppered, especially part B, about three months.

PROCESSING SEQUENCE AND BATH TIMES (at 70°f)

1.	Color Developer	5:00 mins (1)
2.	Rinse, 1/2% acetic acid solution*	2:00 mins
3.	Stop/Fix	5:00 mins
4.	Lights on	
5.	Rinse in running water	2:00 mins
6.	Bleach/Fix	5:00 mins
7.	Wash, running water	10:00 mins
8.	Stabilizer	3:00 mins

Stop/Fix bath, Bleach/Fix bath, and the Stabilizer bath are the same as those shown in the instruction sheets.

Developer is different and also depends on the Color Developing agent used.

*Rinse Bath (step #2) in the original instructions is a water bath; here it is a 1/2% acetic acid buffered with 10 grams/ltr of sodium acetate.

(1) 7 minutes for CD-3.

John K. Diederichs
229 East Lake Shore Drive
Chicago, Ill. 60611

KODACHROME PROBLEMS & C-22, ETC.

"Quote" If there are any brave souls who have the time, patience and money to try this system, we would like to see the results. "Unquote" (Jan/70 Newsletter K12)

I'am abit short on time but long on patience and money but let me tell you some of the problems on K12. First of all wouldn't you know that the printing lights are not a production item. The manufacturer's agent tells me that if I take ten of each light, then the factory will so fabricate.

Secondly, the various "BD's" are not available from any of the usual chemical supply houses here in Canada. The same applies to Carbowax 1540, 4000, Hexylene Glycol, Potassium Borohydride, or CD-4. I have feelers out for the Corning filters but rather suspect Kodak holds the entire stock. I'm much interested in the Borohydride reversal agent. I would be pleased to purchase this chemical and all of the a/m if you could accommodate me.

I have written a friend of mine at the Kodak Processing Labs in North Vancouver requesting suitable quantities of their couplers (I offered to buy). To date I have received a big silence (some friend).

Other than the above, I don't have any problems in processing K12. (there's no way).

L.H. McCracken
Island Divers Ltd.
315A Wesley St.
Nanaimd, B.C.

I'm sold on mixing my own color solutions for C-22 and CP-5 and I'm doing a lot of color work on my job now (accident investigation & legal photography) wherein a year ago I used black & white. I'm very impressed with the results in using your formulas (and, I'm happy to say, so are some of my clients). I do, however, have several questions regarding the new "simplified" formulas for film and paper processes.

1) what are the keeping properties of the "simplified" formulas vs. the "Dignan Unofficial Formulas for CP-5" and the Official Kodak Formulas for C-22 (Modified - SD 39, etc.)?

2) Can the "Simplified" C-22 concentrates be used behind any C-22 developer formula with about the same success or is it necessary to use the C-22 Developer formula (pp U399-400), for which you recommend no replenishment? I don't replenish anyway, but I've been using the "Official" formulas with Kodak's recommendations on capacity and discarding and I'm wondering whether this is better than the "one-shot" instructions regarding the "simplified" developer.

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CP-5 AND E-4

I've compared the results of the mixed Kodak chemicals and the hand-mixed Dignan chemicals according to the respective set(s) of instructions under controlled lighting and exposure conditions. I used the maximum (70 g.) of Sodium Metaborate and saw very little difference in color saturation. In an earlier trial, using 50 g. and then 60 g., I was somewhat disturbed because of the mismatch, but no more. I was gratified to see that you recommended "upping" the Sodium Metaborate content in the January 1969 issue which I hadn't received at the time I first started my tests (serves me right for holding off on ordering back issues).

Anyway, I've showed off some of my Dignan vs. Kodak work and I've gotten a few fellows in this area eager to try "their own thing". I've recommended that they write you directly for catalogs, Newsletters, etc.

Here's hoping the word spreads!

Vincent Edmondson
666 - 11th St., N.W.
Washington, D.C.

Answer: We are reluctant to list the keeping properties of many of the formulas that we have compounded because of the multitude of variables under which each solution is used or stored. For best keeping properties, developers should be stored in clean, brown glass bottles filled completely to the top. We would also recommend distilled or deionized water. Solutions for color paper can easily be checked at the beginning of any printing session be making a test print. Making the test is simple although if they have dropped dead, time is lost in re-compounding. As a rough guide we would say that the CP-5 solution should last at least six weeks when properly stored. The one-shot developer for Unicolor or Dignan Color Print Paper should last about four weeks unused.

An item the Newsletter readers would be interested in was sent to me in a copy of the Kodak Photonews.

NEW E-4 PROCESSING TIME

"Ever come up with low, green-tinted maximum densities when you process Kodak Ektachrome Film in Kodak Ektachrome Film Chemicals, Process E-4?

"This problem can usually be blamed on an old or exhausted E-4 color developer working solution. The best remedy is to discard the solution when you've reached the recommended capacity or storage limit.

"However, the same problem sometimes occurs before the capacity or storage limit has been reached. In that case, the cause is insufficient agitation in the color developer or dilution of the color developer. For extra safety margin, increase the time in the color developer to 15 mins. instead of the 9 mins. previously recommended. This applies to freshly prepared solutions as well as used ones.

Kittredge D. Seely
349 Warpas Road
Madison, Conn.

EKTACHROME MS AND OTHER THINGS

"Ektachrome MS has been changed during the past two to three months. Some of the older formulary will not work on it anymore.

The E-3 process is now very touchy with the new emulsion. While it might work if you don't force develop for addition film speed I can tell you that if you force develop in the first developer you run a chance of losing all the emulsion off the safety base.

It is a shame that producers are allowed to change the emulsion without notice. I ruined one roll and now I am going to have to give it more hardening in order to save the emulsion.

MS works fine in E-4 but I don't like the color I get with E-4."

"There are several of us in PSA that are circulating our own formulae. In many cases they are quite similar to the formulae that you publish, however we have some bleaches that are not affected by light. One of the bleaches that we are using has a life of over one year partially used and stored at 75°f in even bright sunlight.

Thanks again for the much needed service that you are rendering. Due to your efforts there are quite a few people that are experimenting and meeting with considerable success."

Mark E. Ballard
1005 West 6th St.
Marion, Ind. 46952

Answer: We would like to hear from other readers who have the same complaint with Ektachrome S. The problem may be part of a bad emulsion run and not necessarily an emulsion change. Mr. Ballard, you can do the Newsletter a great service by letting us publish your remarkable bleach.

"Sometimes simple things are the best.

Since I make use of the time-temperature calculator every printing session, it makes the two years of subscription worth the price."

Arthur Carlson, Jr.
35 Madsen Road
West Hartford, Conn.

PRINT STABILITY, ETC.

"I have found by analysis that many different formula for color printing, especially the developer and for that matter the stops, sixes and bleaches and yes the stabilizer have many things in common when you look at or compare all formulas.

I hope to find the answer to many of these things:

Surely there must be some universal developer, stop-fix, hypo, bleach combination one can use for processing color prints. If not why not. What is the difference and why?

I have mastered the handling of black and white photography to the point where I can without worrying about developers, etc., produce uniform quality in B&W prints, etc. Blow up the small negatives to 16x20 with consistent good quality without waste of materials. Surely this can be done with color to a certain degree, maybe a little more specific control or handling?

I have found over the years that color developing of reversal films has improved my black and white work. I am sure that printing color will give me an added quality in my black and white work.

I am looking forward from the Newsletter and its simplicity of color processing of films and the making of color prints."

E. H. Welter
5501 Tracy
Kansas City, Mo. 64110

"On talking to the Agfa-Gavaert rep. N.Y. C. a few days ago he somewhat discouraged me on using Agfa Color Paper saying that frankly the Agfa Color dyes would not hold up as well as Ektacolor dyes.

Do you have anything official on this? How about color stability of Luminos and Mitsubishi."

Max Farabee
Farabee's Studios
3005 West Ave
Newport News, Va. 23607

Answer: This question of stability seems to crop up every other day or so. Kodak claims that their Ektacolor paper is more stable than Agfa, etc. This is true BUT it's not that much more stable. If you will place an Ektacolor print along with an Agfa, Dignan Color Print Paper or Unicolor print in the sun, dye fading may occur a few days slower with the Ektacolor paper. In other words, all color paper (except perhaps Cibachrome which we have not tested) will fade if exposed to the sun long enough. Bill Depauk's studio in North Hollywood, who prints nothing but Agfacolor, informs me that his display prints are good for 7 weeks in his store front window which receives direct sunlight for about 4 hours each day. If any of our readers have anything to add to this we would appreciate hearing from you.

ON H&W CONTROL AND OTHER THINGS

"In May of 1969, page I-182 of the Newsletter, Adrian Vance wrote about an extended range developer and indicated that Kodak's High Contrast Copy Film, used with that developer, shows an ASA, or rather, an EI of ten. In November of '69 the Newsletter "reviewed" H&W Control and, at the end of that review it was indicated that the manufacturers of H&W Control"felt that we were wrong in listing Pax X at ASA 4 and High Contrast Copy Film at ASA 10."

----Does this mean (or suggest) that H&W Control is the same as or related to Vance's extended range developer?

----Can you say, or do you know, what H&W Control is?

----Has anybody, to your knowledge, been able to obtain an EI of 25 when using HCCF with H&W Control according to the manufacturers instructions?

(You probably know that with the "Improved HCCF" the instructions call for using 8 ml of H&W for eight ounces of final developer. Moreover, some of the "improved" film has "aged abnormally", i.e., is slow. My best efforts to date, rating the film at EI of 25 have given me negatives of extremely low density which require a number 5 or 6 paper.)"

A few days later we received another letter from the same writer.

"I must follow-up my letter of July 14th because of the implications therein about failure of the H&W Control to meet the claims made for it.

After my repeated poor luck with it I wrote to H&W and described my experience. They were most helpful. Ultimately it was concluded that the difficulty lay in the fact that the developer I had purchased was overage. H&W replaced it and, with the fresh developer an E.I. of 25 and development of 16 min. at 68° provided negatives of good density which print well on about a 1-1/2 grade paper. I can only commend H&W for their helpfulness and their rectification of the problem.

They are ill-advised, I think, to put their developer into polyethylene bottles; they are perhaps the fullest bottles I have ever seen - but unfortunately that does little to prevent diffusion of oxygen thru the PE. The concentrate stores without forming deposits in the refrigerator; transfer to a glass bottle and cold storage should, I think, keep it good to the last drop.

I think, that a very important point involved in using a color negative for making black and white prints has gone without comment. Generally, when the matter is considered at all it is assumed that the color negative can provide perfectly satisfactory black and white prints on ordinary printing papers as long as the mask is absent; the pesky orange mask, when present, so slows down printing speed that it makes necessary the use of the more expensive panchromatic paper produced by the manufacture identified with a particular yellow box. Unfortunately, the basic assumption is seriously in error.

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Few of us would willingly, in our black and white work, give up panchromatic film. In effect, that is precisely what we are doing when we attempt to use a color-blind enlarging paper with a color negative, mask or no mask. The single contrast grade papers see, essentially, only blue light. Printing on them, with a color negative, means that we are discarding both the red (cyan layer) and the green (magenta layer) light record and obtaining a print substantially identical to the one we might have obtained using a process film originally. A perfectly reasonable effect, if thats what you want, but not one to be equated with a black and white print from a panchromatic film.

If instead of single contrast grade paper a variable contrast paper is used with a color negative the effect is, of course, different; it now contains in the print, the record of both the blue and the green light (we have progressed, almost, to the results obtainable with an orthochromatic film) but, because of the way variable contrast paper works, we have also added unwanted, unneeded and haphazard contrast changes to the print.

In short, a good black and white print from a color negative, mask or no mask, requires the use of a panchormatic print paper."

Rex E. Lidov
150 Schenck Avenue
Great Neck, N.Y. 11021

"I am interested in some answers to questions relative to UNICOLOR, AGFA, DIGNAN ONE-SHOT and FIBLE color printing formulae.

I have used both the AGFA kit and the UNICOLOR kit* with very satisfactory results. I am now interested in compounding my own formulae. I have compared FIBLE (M-266) with substitute AGFA STOP-FIX and BLEACH-FIX (C-69) and DIGNAN ONE-SHOT BLEACH-FIX (S-373) and find that they all appear to be essentially the same, except for FIBLE's use of the SODIUM PHOSPHATES - (Monobasic and Dibasic). I also noted that the ONE-SHOT formulae call for the PHOSPHATES in the STABILIZER rather than the BLEACH-FIX. (Furthermore, the FOMACOLOR formulae contain no PHOSPHATES.)

My questions are:

(a) What is the function of the PHOSPHATES?
(b) Why are the EDTA chemicals used for bleaching rather than the more usual Ferricyanide-Bromide (CP-5)?
(c) Is it really necessary to use the AGFA STOP-FIX, with AGFA DEVELOPER, (with or without the water rinse) since the BLEACH-FIX contains an equal amount of Hypo?
(d) Is it possible to use UNICOLOR BLIX or ONE-SHOT BLEACH-FIX following AGFA DEVELOPER, with or without an intervening water rinse?
(e) Why do your suggested formulae for STABILIZER not include ZINC SULFATE or ZINC CHLORIDE (C84-85)?

*I have two other questions based upon a major boner I pulled mixing UNICOLOR-BLIX.

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The first time I mixed the solution I used 8 fluid ounces of the B-BL concentrate ("contains TRI SODIUM PHOSPHATE") with water to make 500 c.c. I forgot (!!) to add any of the B-IX ("contains AMMONIUM THIOSULFATE").

I subsequently processed 6 sheets of 8x10 - UNICOLOR paper and 3 sheets of AGFA MCN-111 paper in the 500 c.c. of fouled-up BLIX, with very satisfactory results! The light greens and yellows were realistically bright and clean. After one month there has been no discernible deterioration of the image.

My questions, Mr. Dignan, are:

(a) What can I expect to happen to the image over a longer period of time?
(b) Is Hypo (or Ammonium Thiosulfate) really necessary?"

Arthur P. Felton
Lookout Hill
Essex, Connecticut 06426

Answer: First of all you have to understand that there are two types of color print paper. The Kodak system of color coupling utilizes what is called resin encapsulated color couplers and this is the reason all of Kodak's color developers utilize Benzyl Alcohol as an accelerating solvent. Indication of this type of emulsion is the opalescence of the emulsion until it's dry.

The other type of emulsion is called the long chain color coupling molecule. This system, originated by Agfa, is used in all of their emulsion film and paper, it's also used by all of the foreign film manufacturers and it's used by Ansco in their films and in some of their papers.

The main reason for both of these systems is to prevent the dyes from wandering around in the gelatin emulsion. Unicolor, Agfacolor, Luminos, Dignan Color Print Paper, Rapid Access, are all the same type of emulsion (the long chain color couplers). It should be obvious that most of these formulas are interchangable, the stop-baths and water rinses used in some systems serve the purpose of preventing contamination of the bath to follow. So where tanks are used for the solutions it is important that each bath lasts as long as possible.

The Phosphates are used for two reasons. The first as buffers to maintain a predetermined pH, the second as stabilizers of the dyes. How will they stabilize with todays emulsions will be covered in some patent reviews in the near future.

There are two types of bleach solutions used today in color processing. The first is based on ferrocyanide, the second on EDTA Ferric Salt. The ferricyanide is the more rapid of the two and must be used for film if any speed is to be had in processing. The silver in paper is

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very finely divided so that the EDTA Ferric bleach is suitable. A bleach fix compounded with EDTA Ferric has good keeping properties. A bleach fix compounded with Ferrocyanide has very poor keeping properties. The stabilizing action of Zinc Sulfate has been specified for certain emulsions. We do not believe in indiscriminately mixing some systems without thoroughly checking the results.

Now for your boner question. It is possible not to bleach a print. This will leave black silver in the exposed area, however, somewhere you must fix the print. It might be possible that the B-BL concentrate also contains Sodium Thiocyanate, which will act as a fixer."

AN ENDORSEMENT OF DIGNAN COLOR PRINT PAPER

"Several weeks ago I began testing the 100 sheet box of Dignan Color Print Paper which I had purchased from your previously. My supply of Ektacolor paper was near exhaustion so I used the last few sheets of the Ektacolor paper for prints to compare with the Dignan paper.

I was surprised and pleased with the results I got from your paper. Further, the filter pack I was using with the Ektacolor paper was within about CC.05 of producing prints of correct color balance. Usually a new emulsion number or a new type of material will require several test prints to bring it into balance but the Dignan paper required only two attempts.

Perhaps the outstanding feature of the Dignan paper, other than the short processing time with minimum chemical solutions, is it's clear whites. The whites in the scene and the borders are really white. The proof of the pudding is to compare an Ektacolor print with a Dignan print both of which have been made from the same negative. With absolutely correct color balance, the Ektacolor print will have an overall yellowish cast which the Dignan print does not have.

The formulas you publish for processing the Dignan color paper are easy to mix, are stable, and work very well. I process my prints at 85°f and have had no difficulties.

I certainly do plan on using Dignan paper in the future since it does produce better prints (with clear whites) and the cost of the chemicals is considerably less than for the Ektacolor paper, especially if one buys the kits. Although my experience has shown that Kodak color films and print papers the most stable available (resistance to fading and color change) I am sure that your tests have shown the Dignan paper to be quite acceptable on this score. The shorter processing time for the Dignan paper is definitely a desirable feature."

W. F. Lehman
7546 Normandy Way
San Jose, Calif.

DIGNAN PAPER - COPY FILM SUGGESTION

"When using your one shot Bleach/fix I noticed that with the first half dozen or so prints, the colors have no saturation with lot of green tint on the surface, with the saturation coming in slowly during the wash and stabilization, and quite a lot of drying down, making it hard to judge before they are dry, while the last prints through the one liter solutions, around the 20 mark, showed barely a change, from 30 seconds into the bleach to the dry print, making it easy to judge as soon as they hit the water.

Am I doing something wrong in mixing the bleach/fix? I haven't seen this phenomenan in using Rapid Access Bleach/Fix, where the prints look the same after a minute in the wash, from first to last.

I am not talking about the greenish tinge in the blacks that you mentioned in your introduction to the paper, and the slight drying down, which is easy to take into account when judging, but in the first number of prints a flesh-tone that will look completely washed out may dry down too dark. If this is the characteristic of this solution, I will try to adjust to it, it just seems funny."

Answer: The reason for this is, the pH of the Dignan Bleach/Fix is on the acid side. As more developer is carried into the Bleach/Fix, the pH of course, goes up. The rapid access bleach/fix has a pH of 7, which explains the lack of color change in this solution. More about this in the October issue. The writer of the above letter also asks the following question.

"What is the difference of Agfa paper designated CN III, CNM III and CN III M and which of these is repackaged by Rapid Access..?"

Answer: The M in both cases is used by the manufacturer to indicate that the paper is balanced for MASK color negatives. This writer also makes the following helpful suggestions.

"When using print film to make transparancies from negatives, I have found it convenient to load my Nikon F with it, remove the lens and the penta-prism, leaving the ground-glas in place, placing it on a 4x5 100 sheet film box, or equivalent elevation, to let the advance lever hang over, and use the mirror and ground glas to focus and crop my image, even a one to one image size, which you can do if your enlarger has sufficient bellows extension (I use a Beseler, which makes it real easy to focus with both lens and negative stage...) by removing the camera from the box, and using an enlarging meter such as the Heath Colorval that I use, and establishing a master, you can come pretty close to the correct slide the first time around. I use a locking cable release, set the camera on B, open and lock it just before making the exposure, closing it right thereafter.

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"The advantages are that the film stays in strip, neatly spaced, easily focused and processed in reels, held fairly flat, and you can use room lights while changing negatives, etc.

The disadvantages are that there is image cutoff if a portion of a fairly large blowup (say 5x7) is to be picked from the edge, so stay fairly close to the optical center of your enlarger lens, and move the negative or the whole carrier around until the wanted portion comes into view, small adjustments can be made thereafter by moving the camera.

The second thing is more in the form of a problem that plagues me, and may be valid in some other cases: so many abbreviations are used in your newsletter articles by your very able writers, who have lived with them for so long, that it is natural to them to think of M1166 as a color dev. agent, X592 as a Gavaert Safe-light Filter, CP-5 a color process and PQ as Phenidone-Hydroquinone developer, but they seem to forget that to anyone who is not yet in it as deep as they are, a referral to one of these abbreviations even though it may have been explained in one of the previous Newsletters, means a long search haphazardly through some back issues, if indeed one has those back issues at hand. So my proposal is a list of such abbr., at least the more obscure ones, with enough explanation with it, to at least jar the memory. This list could be ammended as necessary. I realize it is quite an undertaking but from what I see in your Newsletter you don't shy away from projects just because they have never been done before."

Ott Gangl
3186 S. Jackson Blvd.
Uniontown, Ohio 44685

"I have some questions about Paul Farber's Newsletter article on processing 5251 and 5254. My results do not entirely agree with his. I have been using Dignan chemicals (except for a few that are easy to get from Kodak) but the film is from a cheap source and might be badly outdated.

My biggest trouble is low contrast, not just blue vs. yellow but overall. The next biggest trouble is dull greens in the print, which seems to be caused by low contrast in the magenta layer of the negative. Some of my trouble, but not all, may be from printing on Agfacolor, but I get good prints on it from commercially processed Kodacolor negatives.

I have been able to compensate the contrast, but not the color balance, by overdevelopment, using extra bromide and benzyl alcohol and developing for 30 mins. For this reason I do not agree that the C-22 developer is incompatible with 5251. The biggest difference between SD-30 and the Kodak formula for the C-22 developer as reported in the Dignan booklet is that C-22 has more benzyl alcohol and more bromide, and I have gone even further in that direction with good results. The two formulas also use different accelerators, probably because one is for amateur and the other for commercial use, but reach almost the same pH.

I also disagree with the recommendation about color balance in the camera. On the basis of more or less controlled tests with a standard subject, I'm a little happier with the results I get without a filter outdoors, especially with the overdevelopment I use to boost contrast.

My main question is this: am I developing a useful modification of processing for 5251or am I compensating for bad film stock?"

Martin B. Brilliant
39 McCampbell Road
Holmdel, N.J. 07733

Answer: Paul Farber's answer to the question "Am I developing a useful modification of processing for 5251..." is NO. His answer to "...am I compensating for bad film stock?" is YES.

"I have a special problem, perhaps you could help me solve it. In processing Eastman color negative 5254 and 5385 there is of course a backing to be dealt with. When processing short 5' lengths in the past I have merely wiped it off with a sponge or rag. But now I wish to process 100' lengths on reels. Holding it up to wipe it off can be a problem. Do you have any suggestions?

William Carithers
P.O. Box 1071
Auburn, Ala. 36830

Answer? We have none. Perhaps one of our readers can help solve the problem.

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